

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

BEST AVAILABLE COPY

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element comprising an ion implementation resistor having a capacitive component;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal and said reference potential point and being directly connected to said output terminal of said differential amplifier; and

a second element having a resistive component, wherein:

said first and second elements are connected to remove power supply noise in the power supply voltage source. ~~source, and~~

~~—said first element comprises an ion implantation resistor.~~

2. (Canceled)

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

BEST AVAILABLE COPY

3. (Previously presented) The band gap circuit according to claim 1, wherein said second element comprises a transistor.

4. (Canceled)

5. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element comprising an ion implementation resistor having a capacitive component;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, and

a second element having a resistive component, said second element being connected to said power supply voltage source and said circuit output terminal, wherein:

BEST AVAILABLE COPY

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

said second element is connected to said first ~~element, element, and~~

~~said first element comprises an ion implantation resistor.~~

6. (Previously presented) The band gap circuit according to claim 5, wherein said second element comprises a transistor.

7. (Canceled)

8. (Previously presented) The band gap circuit according to claim 1, wherein said switching element comprises a N-channel MOS transistor.

9. (Previously presented) The band gap circuit according to claim 5, wherein said switching element comprises a N-channel MOS transistor.

10. (Currently amended) A band gap circuit, comprising:
a voltage supply circuit adapted to be connected to a power supply voltage source;
a reference potential point;
a circuit output terminal connected to said voltage supply circuit;
a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;
a first circuit comprising an ion implementation resistor having a capacitive component, for causing a potential difference to occur at said inverting input terminal and

BEST AVAILABLE COPY

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, wherein:

said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor coupling said circuit output terminal to the power supply voltage source and said constant current source, ~~source~~;

~~— said first circuit includes a first element having a resistive component;~~

~~— said band gap circuit further comprises a second element having a capacitive component; and~~

~~— said second element comprises an ion implantation resistor.~~

11. (Canceled)

12. (Currently amended) A band gap circuit comprising;
a voltage supply circuit adapted to be connected to a power supply voltage source;
a reference potential point;
a circuit output terminal connected to said voltage supply circuit;

BEST AVAILABLE COPY

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit comprising an ion implementation resistor having a capacitive component for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, wherein:

said voltage supply circuit comprises a constant current source, a first pair of cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source, ~~source~~,

~~said first circuit includes a first element having a resistive component,~~

~~said band gap circuit further comprises a second element having a capacitive component, and~~

~~said second element comprises an ion implantation resistor.~~

13. (Currently amended) The band gap circuit according to claim 10, wherein said ~~first and second elements~~ second pair of cascaded transistors and said ion implementation resistor

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

BEST AVAILABLE COPY

are connected to remove power supply noise in the power supply voltage source.

14-15. (Canceled)

16. (Previously presented) The band gap circuit according to claim 10, wherein said switching element comprises a N-channel MOS transistor.

17. (Currently amended) A band gap circuit, comprising:

a voltage supply circuit adapted to be connected to a power supply voltage source;

a reference potential point;

a circuit output terminal connected to said voltage supply circuit;

a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;

~~— a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element having a capacitive component;~~

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier; and

~~— a second element having a resistive component, said second element being connected~~

BEST AVAILABLE COPY

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

~~to said power supply voltage source and said circuit output terminal, wherein:~~

~~—said second element is connected to said first element,~~

an ion implementation resistor having a capacitive component, and connected to said circuit output terminal;

said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor having a resistive component and coupling said circuit output terminal to the power supply voltage source and said constant current source, ~~source,~~

~~—said first element comprises an ion implantation resistor.~~

18. (Canceled)

19. (Currently amended) A band gap circuit comprising:

a voltage supply circuit adapted to be connected to a power supply voltage source;

a reference potential point;

a circuit output terminal connected to said voltage supply circuit;

a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;

~~—a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal;~~

a switching element for causing excess current from said circuit output terminal to

BEST AVAILABLE COPY

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

flow to said reference potential point in response to fluctuation of potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential ~~amplifier, amplifier;~~

~~— a first element having a resistive component, said first element being connected to said power supply voltage source and said circuit output terminal; and~~

an ion implementation resistor ~~a second element having a capacitive component, said second element component and being connected to said first element, circuit output terminal,~~
wherein:

said voltage supply circuit comprises a constant current source, a first pair of cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source, source, and
~~— said second element comprises an ion implantation resistor.~~

20-21. (Canceled)

22. (Previously presented) The band gap circuit according to claim 17, wherein said switching element comprises a N-channel MOS transistor.

23. (Currently amended) The band gap circuit according to claim 12, wherein said ~~first and second elements~~ second pair of cascaded transistors and said ion implementation resistor

Serial No. 10/647,468
Docket No.: 2002-249352US
Ref. No. UDA.022

are connected to remove power supply noise in the power supply voltage source.

24-25. (Canceled)

26. (Previously presented) The band gap circuit according to claim 12, wherein said switching element comprises a N-channel MOS transistor.

27-28. (Canceled)

29. (Previously presented) The band gap circuit according to claim 19, wherein said switching element comprises a N-channel MOS transistor.